

Remarks

Claims 87-157 are pending.

Claims 87, 89, 113-119, 121-122, 137, 140, 148, 151 and 154 have been amended. No new matter is added with the amendments, which are intended to merely clarify language used in the claims and the subject matter claimed. The scope of the claims is intended to be the same after the amendment as it was before the amendment.

Rejection of Claims under 35 U.S.C. § 102(e) (Houle)

The Examiner rejected Claims 155-157 under Section 102(e) as anticipated by US 2004/0095727 (Houle). This rejection is respectfully traversed

Claims 155-157 recite a method of fabricating a die which defines forming standoffs on a surface of the die. Claims 156 further defines the standoffs as being affixed to the surface of the die. Claim 157 further defines the standoffs as being exposed on the die.

– Houle does not teach forming standoffs on a die.

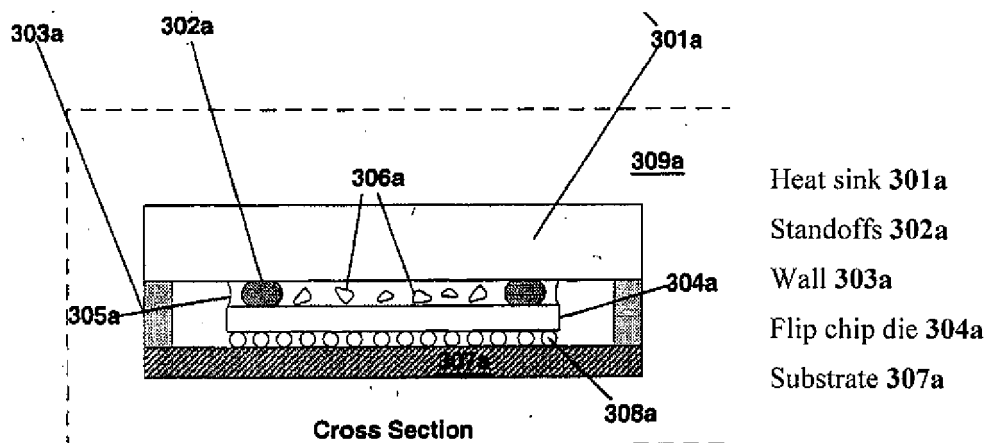
Houle teaches forming standoff **302a** on a heat sink – not on a die.

– Additionally, Houle's standoffs **302a** are positioned between die **304a** and heat sink **301a**.

The standoffs **302a** are not positioned to contact a mold plate as defined in Claims 156-157.

The standoffs **302a** are not exposed on the die as defined in Claim 157.

This is clearly shown below in the cross-section view.



The standoffs **302a** in Houle's device are not formed on the die **304a**, are not positioned to contact a mold plate, and are not exposed on the die as required by the claims.

Houle mounts standoffs **302a** on the heat sink 301a – as shown above (**Fig. 3a** sideview).

Houle does not teach or suggest Applicant's methods as claimed. Accordingly, withdrawal of this rejection is respectfully requested.

Rejection of Claims under 35 U.S.C. §§ 102(e)/103(a) (Shim)

The Examiner rejected the claims as follows:

- Claims 87, 89, 122, 140, 151 and 154 as anticipated by Shim (US 6,534,859);
- Claims 88, 90, 108, 111, 122-123, 135-137, 140-141, 146-148 and 149-150 as obvious over Shim in view of Houle;
- Claims 109-110 and 138-139 as obvious over Shim in view of Houle;
- Claims 92-95, 104, 125-127 and 134 as obvious over Shim in view of Houle and Dolbear (USP 5,926,371); and
- Claims 142-145 as obvious over Shim in view of Houle and Sylvester (USP 6,847,527).

These rejections are respectfully traversed.

The claims have been amended to clarify that, with the standoff situated on the die surface, *a portion of the die surface is exposed*.

By comparison, Shim applies internal and external mold dams **56**, **57** on a portion of the die **42** and then mounts a heat spreader **60** to cover the exposed portion of the die surface. See, for example, **FIGS. 5-6** and the description at col. 6, lines 48-51 and at line 63 to col. 7, line 41 below.

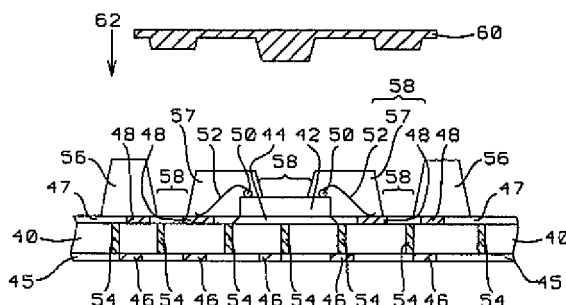


FIG. 5

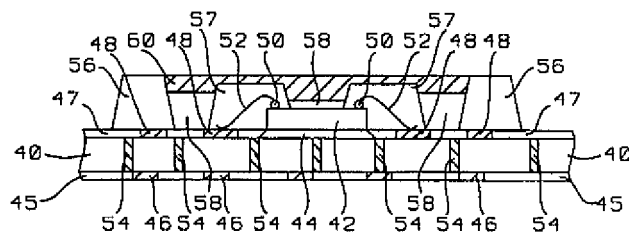


FIG. 6

...The surface of die 42 is exposed through the opening 16 that has been created in the internal mold cap 57, the internal mold cap 57 therefore provides *an exposed area to the surface of the die 42 of the package.*

...
FIG. 4 shows the cross section of the structure of FIG. 3 after the *application of conductive epoxy 58 in the opening 14* (created between the *internal mold cap 57* and the *external mold cap 56*) and *opening 16* (created through the internal mold cap 57). The amount of conductive epoxy that is deposited into openings 14 and 16 must be of enough volume *so that the epoxy 58 makes contact with the thereover to be placed heat spreader of the package.*

...
FIG. 5 shows a cross section where *heat spreader 60* is placed above and aligned with the surface of the layer 56 of the mold compound. The heat sink 60 is therefore attached to the internal mold cap 57 by the inserted thermally conductive epoxy 58 in the centrally located cavity 16 of the internal mold cap 57...

...
After placement of the heat spreader 60 over the surface of layer 56, the cross section of the structure is as is shown in FIG. 6. ...


Shim does not teach or suggest Applicant's methods as claimed, and the added disclosures of the secondary references do not correct the deficiencies of Shim. Accordingly, withdrawal of the rejections of the claims based on Shim is respectfully requested

Extension of Term.

The proceedings herein are for a patent application and the provisions of 37 CFR § 1.136 apply. Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that Applicant has inadvertently overlooked the need for a petition for extension of time. If any extension and/or fee are required, please charge Account No. 23-2053.

It is submitted that the present claims are in condition for allowance, and notification to that effect is respectfully requested.

Respectfully submitted,



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